



Cams cleaned and oiled



Ready to start assembling



Make sure all the small oil channels in the head are blown out with compressed air



New seals and clean oil



I found a 11mm tube socket the perfect size for installing the seals



This is where the seals will be installed on the valve guide



New valve seals in place



Try to place your components in a methodical order so as not to forget something like a valve spring seat



Lube the guides with oil again before installation



Valve cotter about to be installed



Compressing the valve spring



The trick here is to use a long thin screw driver with just the right amount of magnetism and grease



Valve coppers now in place



Coat the stem of the valve in clean oil



First head done



Now give each valve a good solid tap with a medium weight hammer and a flat head chisel to make sure all the cotters are properly seated



First head complete



Now raise your head so as to have a good view of the under side



Pour thinners into each port they must be absolutely air tight even the slightest sweat of thinners past a valve and the valve must be lapped in



Now its time to focus on the block



A quick check of the bores before cleaning starts



A pile of components still to be cleaned



Fuel injecting rail



Mating surface now cleaned with emery paper and thinners



New head gaskets in place



LHS head now in with all plumbing pre connected remember to leave the water cross over pipe slightly loose so as to line up the opposite side (arrowed) . Clean out the housing 1 which will accept the water pipe front to back



This is the knock sensor it lives in the middle of the block if this sensor is faulty you could have unexplained high fuel consumption. In my Nissan zx300tt when this sensor failed I had a sudden increase in fuel consumption the car went back and forth to the dealer 3 times the fault never triggered a code so the dealer was unable to sort the fuel problem. I eventually replaced the sensor and fuel consumption returned to normal



Knock sensor bracket



Install the knock sensor before the RHS head is placed note the routing of the lead runs back and up behind the inlet manifold



Both heads now in place



Water cross over from front to back replace this o ring



Rear plumbing in, I replaced some of the heater hoses half a meter at Midas cost R20



Clean and oil all the head bolts and tap the threads to clean them



I torqued all the head bolts to 110Nm in three stages starting in the middle and criss crossing from the middle outwards



Bottom half of inlet manifold and fuel injection rail now on



To prime the hydraulic lifter I used a syringe and needle with the lifter in the upright position, do not force the needle into the lifter if you use this method



I then primed the complete lifter oil channel, right from startup I never had even a whisper of lifter noise



New camshaft seals on



Apply assembly lube to all the journals one could also use oil I prefer assembly lube on a first start up



Apply lube to all journals in the head as well



Rockers now in place



First cam being installed



Both cams waiting for cam caps set your cams up so as to have the lobes on no 1 cylinder as close as possible to compression stroke on the no 1 cylinder



New cam seals in cam caps on. Torque M6 bolts to 11Nm and M8 bolts to 24Nm in small stages criss crossing from in to outside



This was my old exhaust gas recirculation pipe which I cut up and welded close to make blanking off caps hot exhaust gas in the inlet manifold can't be good for performance in my view



Blanking plate now on exhaust manifold



This is where the pipe fits on the inlet manifold RHS under the main butterfly



Blanking plate now on manifold I can't say I've noticed a difference in performance yet but I'm happy to know the inlet air is now clean



Cam belt now back on



Valve covers on



Turn the engine over by hand a number of times to make sure there is no binding



Now just the wiring and fuel injection to be connected



Thermostat housing on and all plumbing connected



Manifold now on



Accessories bracket now in and just belts to go on now.

The black bar sticking out of the engine bay is a tool I made up to hold the crank pulley when loosening and torquing the crank bolt, if you live in Cape Town and would like to borrow it just let me know. I would never use the method of placing a power bar on the bolt and using the starter motor to loosen the bolt if it breaks off in the crank you will have a serious problem on your hands

My initial plan was to do the valves with the heads on but once I removed the valve covers, firstly I was in complete shock at the state of the heads and secondly its not possible with a quad cam engine .

My total cost for this job was R540.00

The complete gasket set from Alert was R520.00 and R20.00 for half a meter of heater hose from Midas

I presume I could have done this job over a weekend had it not been for all the detailed cleaning I estimate 20hours of just cleaning

HAPPY TO REPORT NO MORE SMOKE

Regards

Colin Kensley